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The store of the future: Engaging customers through sensory elements, personalized atmospherics, and interpersonal interaction

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Abstract

An increasingly competitive retail landscape, new technological innovations, and evolving consumer needs present challenges and opportunities for physical stores. To maintain a competitive advantage, brick-and-mortar retailers must leverage the store environment to curate a captivating experience that cannot be emulated online. Drawing on the competencies that differentiate physical stores from their digital counterparts, as well as evolving consumer expectations, the current research identifies three levers that managers should use to design pleasurable shopping experiences in stores of the future. First, managers can increase their focus on sensory elements (e.g., visuals, scents, sounds, haptics, taste) and use these elements to curate pleasurable, multisensory in-store experiences. Second, managers should consider gravitating from the current one-size-fits-all approach to atmospherics in favor of environments that are personalized and customizable to suit individual consumer tastes. Finally, managers can re-evaluate employee responsibilities, make space for customer-to-customer interactions, and host in-store events to offer optimal levels of interpersonal interaction. After highlighting marketplace examples that provide initial evidence of each lever, individual level factors that likely moderate the effects of each lever on the in-store experience are discussed. Finally, future research opportunities are identified.
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It is a pivotal time for brick-and-mortar stores (Grewal et al., 2020a,b). Online shopping is more convenient than ever with several retailers now offering same-day, one-day, and two-day delivery options (Sandal and McMahon 2022). Additionally, while consumers previously needed to go to brick and mortar stores to try products, technological advances such as augmented reality (AR) and virtual reality (VR) allow consumers to experience products in new ways without leaving their home (Grewal et al., 2021a,b; Shankar et al. 2021). Many shopping sites (e.g., Amazon) also display unique product assortments that are personalized to cater to consumers' individual tastes (Lee and Park 2009; Palmer 2023). Perhaps not surprisingly, e-commerce sales as a proportion of total retail sales are increasing (U.S. Department of Commerce, 2023). In addition to increased competition from online channels, there is also more competition from physical stores since several stores that started online (e.g., Amazon, Warby Parker) now have physical footprints (Grewal et al., 2020a,b).

Evolving consumer needs and expectations present additional challenges and opportunities for brick-and-mortar retailers (Gupta and Mukherjee 2022; Roggeveen and Sethuraman 2020). While consumers have long acknowledged that shopping in-store is more time consuming and effortful than online shopping (Verhoef and Langerak 2001), because of pandemic-related closures, many consumers who once shopped in-store have become accustomed to online shopping (Shaw, Eschenbrenner, and Baier 2022). Moreover, some consumers are hesitant to shop in-store due to concerns about germs/contamination or post pandemic anxiety about large

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groups of people (Jacob et al. 2021; McElroy et al. 2020). At the same time though, other consumers have adapted to permanent remote work (Bacher 2023) and seek socialization in retail stores (Capossela 2022).

To remain relevant in an increasingly competitive environment while balancing novel and divergent consumer needs, retailers need to create pleasurable in-store experiences (Gauri et al. 2021; Roschk and Hosseinpour 2020). Consumers find the in-store shopping experience more enjoyable than online shopping (Verhoef, Neslin, and Vroomen 2007). Not surprisingly, creating a pleasurable shopping experience is a key goal for many retailers (Kahn, Inman, and Verhoef 2018; Verhoef et al. 2009) Thus, stores today and in the future will function not only as a sales channel where consumers select, purchase, pick up, and return products, but as a marketing channel where consumers have a pleasurable, branded experience (Alexander and Cano 2020; Gottleib 2021; Jahn et al. 2018; Shankar et al. 2021).

There can be many factors that contribute to a pleasurable in-store shopping experience. The focus of the current research is limited to factors related to the store environment. The store environment represents the venue where experiences unfold and therefore plays an instrumental role in facilitating pleasurable shopping experiences (Dagger and Danaher 2014; Roggeveen, Grewal, and Schweiger 2020). A recent survey found that more than 80% of shoppers acknowledged that they would return to a physical store with a pleasant environment, recommend the store to others, and shop in-store as opposed to online (Retail Customer Experience 2022). A pleasant environment also positively impacts perceptions of merchandise quality, repatronage intentions (Baker et al. 2002), the amount of time and money consumers spend in the store (Donovan et al. 1994), and can even positively impact online engagement (Marhamat 2021).

Considering the positive effects of a pleasant store environment, and the need to maintain a competitive advantage in an increasingly turbulent retail landscape, brick-and-mortar retailers must leverage the store environment to curate experiences that will motivate consumers to visit stores and cannot be emulated online. Yet, from prior literature the specific aspects of the environment that should be used to create these experiences are not clear. While prior frameworks (See Table 1) identify the importance of the store environment in contributing to pleasurable shopping experiences (Baker 1986; Bitner 1992; Kotler 1973) and emphasize different aspects of the store environment such as social factors (Argo and Dahl 2020) and sensory factors (Spence et al. 2014) that contribute to the in-store experience, they do not elucidate which factors will be useful in driving consumers to physical stores in the future. The current manuscript aims to fill the gap in the literature related to specific factors that managers can use to design pleasurable in-store experiences in the future.

We propose a framework based on three specific levers that retailers can use to curate pleasurable experiences (See Fig. 1). The first lever, sensory focus, stems from a competency that differentiates physical and digital stores. Specifically, a unique advantage of shopping in-store relative to online is the ability of physical stores to stimulate the consumers' senses (Danziger 2019). One of the reasons consumers come to physical stores is to physically interact with products (Liu, Burns, and Hou 2013). In addition to allowing consumers to touch, smell, taste, see, and hear products, physical stores allow consumers to experience the retail brand (Biswas 2019; Velasco and Obrist 2020). To do this physical stores manipulate visual atmospheric elements (e.g., lighting, displays; Biswas et al. 2017; Keh, Wang, and Yan 2021), as well as olfactory (e.g., ambient scent; Biswas and Szocs 2019), auditory (e.g., ambient music/sounds; Ahlbom et al. 2022; Biswas, Szocs, and Lund 2019), haptic (e.g., ambient temperature; Cheema and Patrick 2012), and gustatory elements (e.g., product sampling; Biswas et al. 2023), along with elements related to other sensory modalities (e.g., vestibular sensations; Biswas, Szocs, and Abell 2019). We argue that stores of the future will leverage their unique ability to stimulate the senses and there will be an increased focus on strategically curating multisensory experiences.

The second lever, personalized and customizable store environments, is inspired by consumer desire for products and experiences that meet their unique needs (Epsilon 2018; Franke, Keinz, and Steger 2009; Gilmore and Pine 1997), as well as personalization and customization of online retail environments (Benlian 2015; Thirumalai and Sinha 2011). Traditionally retailers have taken a "one size fits all approach" to atmospherics, designing the environment to cater to what they believed most of their target customers would deem as pleasant. However, individual consumers have unique needs and preferences and have come to expect personalized products and services (Chandra et al. 2022). Online retailers commonly personalize the retail environment and give consumers the opportunity to alter it (Benlian 2015; Thirumalai and Sinha 2011). Consequently, we predict that stores of the future will need to modify some aspects of the environment to meet unique consumer preferences (i.e., personalization) and allow consumers to modify other aspects of the environment to meet their tastes (i.e., customization).

The third lever, interpersonal interaction, also relates to a unique competency that differentiates physical and digital stores. Brick-and-mortar stores offer direct access to human customer service agents which consumers prefer to technology-based agents (O'Shea 2018). Automation of many frontline services has renewed the value of interaction with employees (Giebelhausen et al. 2014; Grewal et al., 2020a). Moreover, with remote and hybrid work becoming more common (Battisti, Alfiero, and Leonidou 2022; Luangrath et al. 2022), many people feel more isolated than they did before the pandemic (Davis and Lester 2022). Consequently, consumers are seeking new venues to interact with others (Grewal et al., 2020a). Stores of the future will facilitate interaction with employees as well as interaction among shoppers. To facilitate interaction with employees, stores of the future will have to continue transitioning employees away from repetitive tasks that can be outsourced to consumers or robots (Huang and Rust 2018), and towards more service-

Table 1
Prior frameworks on the retail environment and the current research.

Paper	Objective	Framework Proposed
Argo and Dahl (2020)	• Review research on social factors in the retail environment.	• **Active social factors** are the retail personnel that directly interact with consumers and secondary consumers that may touch a focal product, or that offer company while shopping (e.g., friends and relatives). • **Passive social factors** are other consumers who don't interact with the focal consumer (e.g., number of people in queues).
Baker (1986), Baker et al. (2002)	• Develop a framework that categorizes environmental variables in servicescapes, and their impact on quality, time, and required effort perceptions.	• **Ambient factors** are background characteristics (e.g., lighting, music, cleanliness, air temperature and quality). • **Social factors** are the humans present (i.e., the number, appearance and behavior of employees and customers). • **Design factors** are foreground elements that can be esthetic (e.g., color, architecture) or functional (e.g., layout, signage).
Biswas (2019)	• Review sensory aspects that affect offline and online retail stores, focusing on managerial relevance.	• Discusses research on the five senses (vision, olfaction, audition, haptics, and gustation) that managers can apply to influence cognitive and behavioral outcomes. Points out the role of cross-modal correspondences and vestibular sensations.
Bitner (1992)	• Proposes a framework for how physical surroundings affect consumers' and employees' behavior.	• **Ambient conditions** are background characteristics related to the senses (e.g., light, music, scent, temperature). • **Spatial layout & functionality** are the arrangement of furniture, machinery, and equipment and the ability of these items to facilitate performance. • **Signs, symbols, & artifacts** are environmental objects that serve as implicit or explicit signals that communicate information about the space to users.
Roggeveen, Grewal, and Schweiger (2020)	• Create a framework for retailers to control consumer experience both in-store and out-of-store.	• **Design factors** are functional and esthetic elements in the foreground of retailer-controlled touchpoints. • **Ambient factors** are background elements. • **Social factors** are the people in the environment. • **Trialability** is the ability to try a product/service or simulate its usage.
Spence et al. (2014)	• Provides a review of sensory aspects that impact affective and cognitive responses at stores.	• Categorizes atmospherics related to each of the five senses (vision, olfaction, audition, haptics, gustation) and discusses how each influences affective, cognitive, and behavioral outcomes. A multisensory discussion is provided with a neuroscience focus.
Kotler (1973)	• Offers a systematic exposition of atmospheres in retail stores.	• Discusses how visual, auditory, tactile, and olfactory perceptions contribute to the atmosphere (said taste did not apply since an environment can't be tasted).
Current Manuscript	• Identifies levers managers can use consumers to stores in the future. Identifies individual factors that moderate the effects of each lever.	• Increased sensory focus. • Personalized and customizable store environments. • Interpersonal interaction.

oriented shopper facing tasks. Additionally, stores of the future will address consumers' need for socialization through offering events and spaces to facilitate such interactions.

As Fig. 1 illustrates, technology will play an important role in supporting each lever.

While typically thought of as a tool to increase operational efficiency (Grewal et al., 2020a; Moran and Silverstein 2023), technology can also positively impact the shopping experience by way of enhancing the store environment (Grewal et al., 2021a,b). Stores of the future will employ technology to enhance sensory experiences and interpersonal interaction and facilitate personalized and customizable atmospherics. Finally, we predict that individual-level factors will moderate the effects of the proposed levers on the pleasantness of the experience. Next, we discuss each of the three levers in more detail. Then, we turn our attention to how individual-level factors will moderate the effect of each lever on the in-store experience.

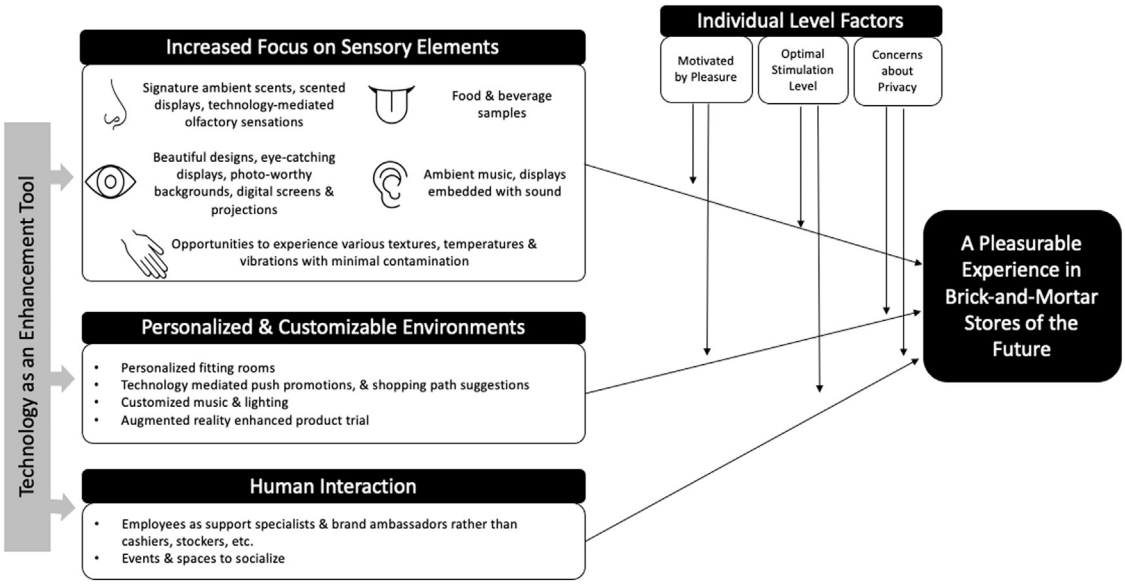
Individual Level Factors
Motivated by Pleasure
Optimal Stimulation Level
Concerns about Privacy
Technology as an Enhancement Tool
Increased Focus on Sensory Elements
Signature ambient scents, scented displays, technology-mediated olfactory sensations
Food & beverage samples
Beautiful designs, eye-catching displays, photo-worthy backgrounds, digital screens & projections
Ambient music, displays embedded with sound
Opportunities to experience various textures, temperatures & vibrations with minimal contamination
Personalized & Customizable Environments
Personalized fitting rooms
Technology mediated push promotions, & shopping path suggestions
Customized music & lighting
Augmented reality enhanced product trial
Human Interaction
Employees as support specialists & brand ambassadors rather than cashiers, stockers, etc.
Events & spaces to socialize
A Pleasurable Experience in Brick-and-Mortar Stores of the Future

Fig. 1. The store of the future: using sensory elements, personalized and customizable atmospherics, and interpersonal interaction to create optimally pleasurable in-store experiences.

Increased focus on sensory elements

When designing the store environment, retailers often incorporate attractive product displays (Keh et al. 2021), beautiful art (Wang, Xu, and Zhang 2023), and specific lighting levels (Biswas et al. 2017). That is, retailers pay attention to visual elements. However, retailers also vary other sensory elements. For instance, they often vary olfactory elements through adding signature ambient scents (Biswas and Szocs 2019), auditory elements by playing specific types of music (Ahlbom et al. 2022), and haptic elements such as the temperature of the store (Cheema and Patrick 2012) or the texture of materials consumers touch (Meyers-Levy, Zhu, and Jiang 2010). Retailers might also add a gustatory element to the shopping experience by offering product samples (Biswas et al. 2023). Finally, stores even influence the vestibular sensations associated with balance and posture that consumers experience through the presence or absence of seating options in the environment (Biswas et al. 2019). As these examples suggest, it has become common practice for retailers to manipulate atmospherics to alter the sensory experiences consumers have in-store and ultimately facilitate pleasant shopping experiences.

We argue that, in the future, retailers will need to invest more in these and other sensory elements to create unique and pleasurable experiences. Next, we discuss examples of the increased retailer focus on sensory elements in each of the five conventional senses (i.e., visual, olfactory, auditory, haptic, and gustatory elements) as well as the potential for focus in other sensory modalities.

Vision

Appealing visual elements in the store environment have long been known to positively impact consumers' store and merchandise perceptions (Baker, Grewal, and Parasuraman 1994). More recently, attractive visual elements such as imaginative product displays have been shown to positively impact sales (Keh et al. 2021). Considering the positive effects of attractive visual elements, retailers hire architects and interior designers to create captivating retail spaces (Hollannavar 2023). They also refresh these displays frequently to offer shoppers a novel experience each time they enter. For instance, Story (a NY based retailer) changes the theme and associated merchandise every 4–6 weeks (Alexander and Cano 2020), H&M Brooklyn Boutique rotates visual displays and music every twelve weeks (Ryan 2022); and the Gymshark flagship store in London has a versatile floor where the selling space can be transformed in fifteen minutes to provide different experiences for consumers (Fish 2022). We predict that the importance of attractive visuals will continue such that environments of future stores will not only need to be functional, but also beautiful.

A handful of retailers currently devote real estate to photo-worthy ambient features which supports the predicted trend towards aesthetically alluring retail spaces. For instance, L'Occitane's 5th Avenue store includes stationary bikes so shoppers can photograph themselves cycling through Provence (Rao 2018). Bikini Mall in Berlin features a plant wall complete with a swing (Stratten 2019). And many independently owned stores house selfie walls (Abdullah, 2022; McClelland 2021). In addition to attracting consumers' attention and creating an overall pleasant ambience, these ambient features aim to increase consumer engagement and may have the potential to decrease product returns (Abdulla 2022).

Rather than solely relying on physical installations, stores of the future can leverage technology to create attractive, engaging, and novel displays. Recent surveys show consumers expect to find interactive and non-interactive screens in store and that the availability of screens is influential in choosing a

store to visit (Mood Media 2022). Digital screens can be used to display products or related attractive images, engage with shoppers, or communicate brand-related information (Moulton 2020). Utilizing digital screens in-store can also positively impact financial outcomes. For instance, sales at Rebecca Minkoff increased after fitting rooms were equipped with screens that allowed shoppers to request items to be brought to them as well as view items, they try on styled in various ways (Grosman 2017).

Several retailers incorporate digital screens into stores. Apple now incorporates video walls in all stores (Keyser 2022). Modivo, a clothing retailer in Warsaw, has screens covering walls from floor to ceiling that display merchandise and store promotions (Retail Customer Experience 2021). Walgreens and Kroger use screens on refrigerated coolers to ensure products are consistently displayed in an attractive way (Wood 2023).

We predict that stores of the future will need to continue incorporating screens and that they may even embed screens with motion sensing technology that will activate the screen when a consumer enters a specific area of the store (Cameron 2022). Motion activated screens could give shoppers the illusion that video content was curated just for them, further supporting the theme of personalized environments which we discuss later. Additionally, screens could allow retailers to easily refresh the backdrop to photo-worthy store displays.

Digital technology also allows retailers to display images and information without the use of a screen. Two popular digital technologies for displaying images and information are holograms and projectors. H&M started using holograms in window displays to entice consumers to enter the store (Retail Customer Experience 2023). DSW, Fossil, and Levi Strauss & Co have used projectors to display clothing designs on mannequins and images on other backgrounds (Boyle 2021). Projected scenes can create an immersive experience for the shopper (Lumen and Forge 2022) as well as increase sales when they are used to create moderately vivid product displays (Schweiger et al. 2023).

Retailers can also use augmented reality and virtual reality to facilitate novel visual experiences. Harrod's department store used augmented reality in window displays such that passersby could scan a QR code to witness a dance performance by a Harrod's robot (Emrich 2022). Some Nike stores used virtual reality technology to allow shoppers to view various locations involved in Nike's supply chain (Falsy 2022). The North Face used virtual reality displays in their US flagship stores to transport shoppers to Yosemite National Park (Dua 2015).

Stores of the future can leverage holograms, projectors, and virtual reality to facilitate captivating visual displays. Future retailers might allow consumers to project digital images of themselves into different spaces (Grill-Goodman 2018). For instance, rather than changing the light in a fitting room to anticipate how clothing will look, consumers may be able to project digital images of themselves into a scene or context to see how an outfit looks. Additionally, retailers may be able to leverage technology to outfit employees. Burberry recently used holograms of models wearing its attire in a fashion show (CBS 2023). Stores of the future can also use virtual reality to guide consumers to various virtual settings that might be relevant to their product or brand. We predict that stores of the future will use technology to an even greater extent to create novel visual experiences that traditionally would have been expensive or labor-intensive to create.

Olfaction

Retailers often infuse stores with scents (Biswas and Szocs 2019). The commercial scent market is valued at $800 million (Newman 2022) and expected to increase further in the near future (Reports and Markets 2022). There are several benefits of infusing scents into the retail atmosphere. Scent can positively impact product evaluations (Bosmans 2006), memory (Morrin and Ratneshwar 2003), and sales (Roschk and Hosseinpour 2020). Considering the positive effects of scents, several retailers have trademarked signature scents. For instance, Hugo Boss infuses scents of fruit and cocoa into stores while Hamley's Toy Store smells like a pina colada (Biswas and Szocs 2019). The iconic scent of Abercrombie and Fitch stores has become part of the retailer's unique identity (Yong 2022). While these stores use ambient scents to create and reinforce positive brand associations, other retailers use ambient scents to activate associations with product use environments. For instance, The North Face Soho store is infused with a scent that resembles Yosemite National Park (Newman 2022). Using scent associated with the product usage environment can create an immersive shopping experience and may even catalyze sales of complementary products.

Technological advances may soon allow retailers to incorporate scent in novel ways. For instance, emerging technology translates fragrances into visual displays by anticipating the emotions the fragrance will evoke and communicating the anticipated emotions via color (Givaudan 2023). Such technology may be used in stores of the future to complement product displays. Additionally, scent company Byredo partnered with technology company RTFKT to launch an initiative where consumers can create customized fragrances by merging NFTs (McDowell 2022). Finally, at the 2023 National Retail Federation Conference, the Samsung booth featured scent producing kiosks (Samsung 2023). Retailers of the future should use scent at the display or department level (rather than the store level) to optimize product sales and the in-store experience.

Current technology trajectories suggest that consumers should be able to experience scents digitally by 2030 (Fourtané 2020). Thus, brick-and-mortar stores have a vested interest in strategically using scents to create pleasurable and memorable experiences.

Audition

Early studies on the effects of sounds in stores focused on ambient music and showed specific types of music can

increase the amount of time spent shopping (Yalch and Spangenberg 2000), decrease dining time (Caldwell and Hibbert 2002), and enhance consumers' positive mood (Bruner 1990). Considering the outcomes that result from incorporating music into the ambience, retailers started experimenting with different types of ambient music and sound and now use them strategically. For instance, Nespresso uses ambient music to support their luxury brand identity (Gadson 2022). PANGAIA stores use ambient sound rather than music to create an immersive forest experience that complements that brand's sustainable mission (Price 2022).

Other retailers use sound to capture attention and encourage specific movement patterns. To capture the attention of passersby, Heel's Department Store created a window display that looked like a child's bedroom. The display was complete with a television that played cartoons pedestrians could hear (Feonic n.d.). To facilitate movement to the second floor of their San Francisco Flagship store, AT&T placed speakers playing music near the escalator (Lueck 2021).

Retailers can also use sound to augment the product experience (Spence 2015). For example, Porsche had a pop-up exhibition in New York where attendees experienced the sound of riding in the 911 (Porsche 2014). More recently, Mastercard developed an auditory logo that consumers hear every time they use their card in-store (Melzner and Raghubir 2022). Augmented reality enabled labels on Ensophia Wine bottles allow consumers to experience music that pairs with the wine (McQuarrie 2022). Similarly, consumers can scan QR codes on Campbell's soup cans to listen to music (Rahman 2021). Scanning these products in-store gives consumers a preview of the product experience and may even stimulate sales since consumers are more likely to purchase products when displays incorporate music or product-relevant sounds (Drenik 2022; Schweiger et al. 2023).

In addition to ambient and product-related music and sound, another auditory element comes from robots. Robots with facial recognition technology can recognize customers and greet them by name as they enter the stores (Hemsworth 2020; van Bure 2021). Stores of the future should be able to leverage this technology to customize product-related sounds and information based on shopper demographics, facial expressions, or previously recorded information. Considering the effects sound has on consumers' affective and behavioral responses as well as its use in branding, auditory cues should be at the forefront of store experience design.

Haptics

A unique feature of brick-and-mortar stores is that they allow consumers the opportunity to physically touch products. While this can be alluring to consumers high in autotelic need-for-touch (Peck and Childers 2003), it may be less beneficial for consumers who are apprehensive about germs and contamination (Argo, Dahl, and Morales 2006), especially since COVID-19 (Knowles and Olatunji 2021). Interestingly, while many stores encourage touch, some discourage it and instead facilitate haptic experiences via technology. In terms of encouraging touch, Apple stores are known for interactive product displays (Briggs 2022) and both Ulta and Sephora provide testers for shoppers to utilize when sampling products. Other retailers use different tactics to facilitate haptic sensations. For instance, some boutique stores incorporate various textures into the store design to encourage varied haptic sensations, and many retailers have reopened hot food bars to allow consumers to directly select options (Friend 2022). Some retailers even use technology to encourage product touching. Saatva stores use smart displays that reveal product information when consumers lift products from shelves (Briggs 2022). Kate Spade stores use augmented reality to display customization options when a consumer removes a bag from the shelf (Grill-Goodman 2018). Shoppers at both Saatva and Kate Spade might lift products just to activate the information presentation.

While the previous examples illustrate how some retailers encourage touch, other retailers have taken strides to discourage touch. Sensors embedded in store robots prevent the robots from running into consumers or displays creating unwanted haptic experiences (Velasco and Obrist 2020). Other retailers use technology to facilitate haptic sensations without allowing consumers to physically handle products. Digital displays at Lego's London store allow shoppers to feel and move digital blocks through gestures and even experience a crumbling sensation when blocks fall (Ultraleap 2021). Gesture-activated kiosks at KFC allow diners to point to menu selections limiting the need to physically touch the kiosk (Green 2021). Cosmetics stores Sephora and Amorepacific allow shoppers to virtually try on products which eliminates the need to sample from shared product testers (McQuarrie 2020). Enabling haptic experiences via technology may be one way to avoid consumer reactance stemming from prohibiting touch altogether (Ringler et al. 2019).

Stores of the future might also leverage haptic simulating technology to reduce losses associated with package damage (White et al. 2016). Consumers often open packaging to touch and feel a product and subsequently buy an unopened product (Argo et al. 2006). By allowing consumers to virtually experience product-related texture, compliance, weight, and temperature stores of the future might mitigate the need for physical product interaction.

Retail managers often encourage haptic experiences because of the positive responses these experiences elicit. Touching a product encourages purchase (Peck and Childers 2006). Using (i.e., holding) a cell phone while shopping can divert consumers from their pre-determined shopping path and lead to unplanned purchases (Grewal et al. 2018). Shopping with a handheld scanner can increase sales for consumers shopping without a budget (Grewal et al., 2020a). Considering these positive effects, stores of the future should use innovative tactics to encourage haptic sensations while also minimizing germ-related risks. One such tactic might be through displaying imagery of other consumers touching a product since vicarious haptic experiences have many of the same positive effects as direct haptic experiences (Luangrath et al. 2022).

Gustation

Consumers often experience gustatory (i.e., taste) sensations in stores. For instance, malls often contain food courts, some retailers (e.g., Costco, Target) have in-store snack bars, other retailers house coffee bars (e.g., Barnes and Noble, Whole Foods), and still others offer free samples (e.g., Trader Joe's). Retailers incorporate gustatory experiences to promote specific products as well as to elevate the overall service experience (Biswas et al. 2014; Meyersohn 2022b). In-store gustatory experiences are a key reason consumers visit some stores (e.g., Costco and Sam's Club; The Harris Poll 2021).

Recent research suggests that gustatory experiences can increase sales of specific types of products (Biswas et al. 2023). Considering the positive outcomes of gustatory experiences, we predict that stores of the future will benefit from using gustatory experiences strategically. For instance, they may offer product samples with specific flavors, textures, or temperatures to encourage sales of different types of products. Technology can even be used to facilitate product sampling. Robots that interact with consumers in stores are already in use. For instance, Smiley, a robot owned by Mars Wrigley, sings and dances through the aisles of grocery stores delivering the brand's candy and gum to shoppers (Lindell 2021). Stores of the future will likely use robots to hand out actual food samples to strategically influence sales.

Nontraditional sensory systems

The vestibular system controls balance and posture and has been shown to impact product experiences (Biswas et al. 2019). Retailers of the future may use vestibular sensations strategically by placing chairs or sitting areas in certain areas of stores. This would be especially relevant in stores with a large physical footprint such as Ikea. There is also scope for using proprioception (sense of movement) in stores of the future. Extant research shows that the pace at which consumers move through a retail environment is influenced by the spacing of floor markers (Van Den Bergh et al. 2016). In addition to using floor markers to encourage shopper pace, stores use augmented reality to alter consumer movement. For instance, Westfield malls hosted a scavenger hunt where holiday shoppers could scan a QR code with their smart phone to activate a hunt for virtual characters hidden throughout the mall (Emrich 2022). Stores of the future should make virtual features available to tech-savvy consumers. This might even lead to gamification of the in-store experience. For instance, rather than waiting on a bench while a co-shopper explores a store, an individual might instead use their mobile phone to engage with augmented reality content produced by the retailer. Gamification could also be used to encourage repeat visits to stores of the future. For instance, a shopper might be motivated to return to a store if doing so meant "leveling-up".

Personalized and customizable shopping environments

As mentioned previously, retailers to date have designed environments to appeal to the masses. Yet, individual consumers have unique preferences when it comes to in-store experiences (Solis 2022) and desire products and experiences that fit their unique preferences (Epsilon 2018; Gilmore and Pine 1997). Consumers have even come to expect personalization in many domains (Chandra et al. 2022). This expectation may be driven in part by being regularly exposed to personalized content when shopping online. Online retailers regularly personalize webpages, by displaying the consumer's name on the page, or featuring an assortment of products or a specific banner ad based on the consumer's past online behavior (Leask 2023; Thirumalai and Sinha 2011). Online retailers also customize the environment by allowing consumers to alter the number of products displayed on each page (Benlian 2015).

Empirical evidence suggests that consumers respond favorably to offerings tailored to their preferences (Franke et al. 2009), and may even spend more for experiences that meet their unique needs (Brown 2021). Considering consumer desire for experiences that fit their unique needs, and the frequency with which consumers experience retail environments that are personalized and customizable online, we predict that stores of the future will move away from the current one-size-fits all approach to atmospherics. More specifically, we predict that retailers will modify some aspects of the environment to meet unique consumer needs (i.e., personalization) and allow consumers to modify other aspects to their tastes (i.e., customization). Thus, we predict that stores of the future will offer more personalized environments and allow for more customization of the store environment.

Some stores are already taking steps towards personalizing the physical environment. For instance, Alter'd State employees write the shopper's name on their fitting room door (Vembar 2019). Target recently invested in technology that leverages shoppers' mobile phones to direct them to products they might find appealing, essentially suggesting a personalized shopping path (Tode 2017). Digital signage technology allows consumers to see ads and hear music based on the products they remove from shelves (Drenik 2022). Some industry experts suggest that facial recognition devices in displays will eventually be able to encode consumer characteristics and alter display imagery accordingly (Kochelek 2021). Thus, stores of the future may be able to create personalized in-store imagery (e.g., photo-worthy displays, hologram models that match shopper demographics). Stores of the future might also be able to leverage GPS and consumers' purchase history to create individual playlists for shoppers to listen to as they traverse stores.

In addition to modifying the environment to suit specific consumers, retailers also allow consumers to alter the environment to meet their preferences (i.e., customize it). Reformation allows consumers to plug their phones into fitting room speakers so they can listen to their own music while

they try on sustainable clothing (Keywan 2022). Smart mirrors at Rebecca Minkoff stores allow shoppers to adjust fitting room lighting to see how the clothes they are trying on will look in different environments (Teamwork Commerce 2022). Finally, smart mirrors at COS stores allow consumers to see how merchandise they try on will look styled for them with complementary items and accessories (Silberstein 2022).

Customization extends beyond the fitting room in some retail domains. Design companies Muzeo and Maud Bury created a completely customizable hotel room concept. Guests can choose from one of ten décor themes, select artwork to display on the walls, and choose the furniture purpose and arrangement (OnHospitality 2021). Will this level of customization be available in stores of the future? We predict that stores will need to continue to invest in technology that allows each shopper to have an in-store experience that meets their unique needs. At some point this may mean consumers will have the option to shop in micro stores designed specifically for them.

Fostering interpersonal interaction

A key factor differentiating brick and mortar stores from online stores is the access to humans that in-store shopping provides. Consistent with this, interviews with industry experts reveal that they view the store as a "human connector" (Alexander and Cano 2020). Interactions with employees and other shoppers (both co-shoppers and other incidentally encountered shoppers) influence the shopping experience (Argo and Dahl 2020).

Online retailers often have chat bots or automated phone services as the first line of customer support, whereas physical stores offer shoppers direct access to employees. Interactions with human employees are becoming rarer but also more valued (Giebelhausen et al. 2014; Grewal et al., 2020a). The increased value of interpersonal interactions may be because, compared to interactions with technology, interactions with human employees tend to be warmer (Keeling, Keeling, and McGoldric 2013).

There is evidence that retailers are implementing tactics to facilitate interactions with employees for those shoppers who want it. Jumbo Supermarkets in Netherlands have a special checkout devoted to shoppers who want to chat with the cashier (Snively 2019). Other retailers are leveraging technology to facilitate the use of human labor hours for customer interaction. For instance, BJ's Wholesale Club and Sam's Club use AI powered robots to manage inventory (Baldwin 2023). Walgreen's uses robots to fill prescriptions to allow employees to focus on interacting with customers (Wurmser 2022).

Labor saved by using robots to perform repetitive tasks also allows employees to take on new roles. For instance, Best Buy offers in-home support and some McDonald's offer table service (Begley et al. 2019). Other companies have expanded what was traditionally the sales associate role to one of a brand ambassador responsible for creating connections with consumers (Mathews 2022). Ambassadors at Neuhaus Belgian Chocolates are expected to reflect the brand in addition to offering an exceptional experience (Gelb and Rangarajan 2014). We predict that advances in technology will facilitate most retail functions not directly tied to customer interaction (e.g., merchandising, store walkthroughs, cleaning, inventory checks) to be delegated to robots. In addition to having more time to interact with customers, employee-customer interactions will be especially effective as retail employees gain access to real time customer purchase history and preferences. For instance, facial recognition technology may allow employees in stores of the future to greet customers as they enter a store/department and direct them to relevant products.

In addition to facilitating interactions between customers and employees, brick-and-mortar stores can also facilitate interactions among shoppers to meet consumers' needs for social experiences. Several retailers have taken steps in this regard. Fitting rooms at Abercrombie and Fitch and Alter'd State have extra space and seating to accommodate shopping companions (Keywan 2022). Ikea, Target, and Whole Foods stores often house cafeterias, coffeeshops and bars where consumers can come together to share a meal, coffee, or beer (Monteros 2022). Rather than devoting physical space to socializing, other retailers host events. For instance, Lululemon organizes wellness clinics, a run club, and yoga classes (Ludmir 2023), and HEB in Austin, Texas hosted a live music performance (Monteros 2022).

We predict that stores of the future will continue to offer socialization for consumers seeking it. In doing so, they may also create additional revenue opportunities. As evidence of the trend towards facilitating socialization, Saks Fifth Avenue bid on a gaming license that would allow them to open a casino in their New York flagship (Snelling 2022). Perfume retailer L'Occitane is testing a new retail concept which features a restaurant, coffee station, and dessert bar alongside their perfumery (Parsons 2022).

Instead of facilitating actual socialization, stores of the future can also use atmospherics to increase or decrease perceptions of crowdedness. For instance, stores of the future can use ambient sounds of human voices (Ringler, Jones, and Stevens 2022) or warm ambient scents (Madzharov, Block, and Morrin 2015) to enhance perceptions of the number of others present.

Retail stores can also use technology to project people (e.g., endorsers) into their stores. For instance, the NFL has projected football players into stores to interact with customers (CBS 2023). With virtual reality and augmented reality technology, consumers can experience different people each time they visit a store.

Technology can also be used to foster social connections with the retailer as well as other consumers. Karl Lagerfeld stores encourage consumers to take a selfie on iPads installed in fitting rooms, add a brand filter, and upload it to social media (Lo 2014). Images of humans on a webpage increase perceptions of social presence relative (Hassanein and Head 2007); thus, it is possible that stores of the future might be able to use digital displays featuring other consumers to add a social element to the ambience during non-peak hours.

Moderating effects of individual level factors

The three levers discussed in the previous sections may not be equally effective in facilitating a pleasurable in-store experience for all consumers. We predict three individual level factors, identified based on theoretical and practical considerations, will moderate the impact of these levers on the shopping experience. From a theoretical perspective, the effects of atmospherics have been shown to vary based on shopper motives (Baker and Wakefield 2012; Kaltcheva and Weitz 2006) as well as optimal stimulation levels (Mittelstaedt et al. 1976; Spence et al. 2014). Some research (e.g., Guido et al. 2007; Mehta et al. 2013) even examines the moderating effects of both shopper motives and optimal stimulation levels on the effects of atmospherics. With stores of the future offering additional sensory stimulation and interpersonal interaction it will be critical to account for various optimal stimulation levels (OSL) and shopper motives. From a practical standpoint, given the role that technology plays in each lever, and the fact that privacy concerns have been shown to drive consumer responses to technological advancements in retail (Inman and Nikolova 2017; Martin and Palmatier 2020), it makes sense to account for privacy concerns.

Pleasure vs. task-oriented shopping motives

Consumers visit physical stores with different objectives. Some consumers seek pleasure while others merely want to obtain a specific set of items in an efficient manner (Babin et al. 1994). Sensory elements may be more effective in facilitating pleasurable shopping experiences for consumers motived by pleasure. Consistent with this prediction, sensory stimulation has been proposed to be more important for consumers with hedonic shopping motives (Wagner and Rudolph 2010). This may be because consumers with strong (vs. weak) hedonic shopping motives experience greater pleasure from atmospherics (McGoldrick and Pieros 1998). Exciting store environments also positively impact consumers with hedonic shopping motives but negatively impact shoppers with utilitarian motives (Holmqvist and Lunardo 2015; Kaltcheva and Weitz 2006).

Personalized environments would likely also have a stronger effect on pleasurable experiences when consumers are motivated by pleasure. Personalized shopping routes enabled through technology can support hedonic shopping motives by exposing consumers to products that they would enjoy (Riegger et al. 2021).

In terms of how shopper motives might influence the effect of interpersonal interaction on the shopping experience, task-focused shoppers tend to respond negatively to retail crowding (Eroglu and Machleit 1990). This suggests customer-to-customer interactions that decrease shopping efficiency would likely not be valued by task-focused consumers. Interactions with employees on the other hand may be welcomed, especially if they would help the shopper achieve the task at hand. Considering these divergent possible outcomes, we do not make any predictions about the moderating effect of shopper motives on the relationship between interpersonal interaction and pleasurable experiences.

Optimal stimulation levels

Consumers vary in the level of sensory stimulation they desire (Steenkamp and Baumgartner 1992). Some consumers seek out novel, high intensity experiences; others instead prefer routine, lower intensity experiences (Luangrath et al. 2022). A consumers' preferred stimulation level might stem from their sensory sensitivity which is relatively stable (Robertson and Simmons 2013; Tepper, Christensen, and Cao 2001) or from situational factors which vary frequently (Peck and Childers 2006; Ringler et al. 2019). Because consumers often make choices to manage their optimal stimulation (Menon and Kahn 1995), a consumer who usually craves high levels of stimulation may opt for lower levels when they are stressed or anxious. Consumers with low optimal stimulation levels might find bright lighting, flashing digital screens, loud music, and interactions with unfamiliar sales associates as off putting. The same consumers however, may prefer the elements they typically avoid if they are tired or bored. We predict that the extent to which sensory elements and interpersonal interaction will positively impact the shopping experience will therefore vary based on the customer's optimal stimulation level at the time of the shopping experience.

Retailers of the future should adopt inclusive tactics to meet the needs of consumers with varying levels of optimal stimulation. Some retailers have already taken steps in this regard. For instance, Sobey's, a Canadian grocery chain, and Selfridges, a department store in London, have sensory-friendly shopping hours when noise is minimized, and lighting is dimmed (Lombardo 2019; Selfridges 2023). Stockland shopping centers in Australia take a different approach and offer a sensory map so that shoppers with varying sensory sensitivities can identify areas to approach and avoid (Autism Spectrum Australia 2022). Estee Lauder provides consumers with varying sensory sensitivities a lanyard to display to employees to alert them to offer specialized service (Howe 2021). Finally, some Sephora stores in Europe allow shoppers to select one of two colors of shopping baskets to signal to employees whether they want to be approached or not (Prinzivalli 2019).

Other retailers have taken steps to address consumer concerns about contamination which might lead them to enter stores anxious and overstimulated (Grewal et al., 2020a; Luangrath et al. 2022; Velasco and Obrist 2020). For instance, recognizing that some consumers may be hesitant to interact with store artifacts, 7-Eleven stores in South Korea adopted payment systems where consumers scan their palm to avoid touching contaminated surfaces (Mcquarrie 2017). Similarly, menu boards at Kentucky Fried Chicken restaurants in Poland allow diners to point to options they would like to order to avoid touching a self-service kiosk (Green 2021). Stores of the future will likely need to move away from store artifacts that multiple consumers touch (e.g., shopping carts,

payment kiosks, self-service menu boards) or employ self-cleaning technology for devices that are touched repeatedly. In that regard, Hy-Vee introduced an automated shopping cart cleaning system to increase safety and hygiene at stores (Redman 2020). It is possible that gestures will control shopping carts of the future, further eliminating the need for physical contact. Moreover, smart shelving systems currently in use in Amazon Go stores might allow consumers to place selected items directly into reusable shopping bags and avoid having to load merchandise onto a conveyer belt used by other consumers (Elyse 2023).

Another tactic retailers might employ to meet the needs of overly stimulated or anxious consumers is to create a relaxing environment. In that regard, the Vitamin Shop infuses lavender ambient scent into the environment to relax consumers (Meyersohn 2022a). Ritz Carlton offers CBD (Cannabidiol) infused foods and beverages in their restaurant and massages with CBD oil in their spa (Smith 2023). Stores of the future may quell consumer anxiety through soft music, specific scents, or foods/beverages that induce relaxation. Another relaxing technique that retailers can adopt is inducing autonomous sensory meridian response (ASMR), which is a perceptual sensory phenomenon, which encompasses a pleasant and calming tingling sensation; this can be induced through auditory and visual cues (Lloyd, Ashdown, and Jawad 2017). Finally, stores of the future may offer quiet, comfortable spaces where consumers can go to relax physically or mentally.

Privacy concerns

Many consumers are uncomfortable with the amount of data retailers collect about them (Martin et al. 2020). Those who are highly concerned take action to manage the data a retailer can collect (Martin and Palmatier 2020). For instance, the results of a recent survey showed that 70% of consumers have stopped shopping at a store due to privacy concerns (Germain 2021). Academic research shows privacy concerns negatively influence purchase intentions (Martin and Murphy 2017) and can negatively impact consumer responses to retail technology (Inman and Nikolova 2017).

Many consumers will embrace personalized atmospherics that retailers are able to provide based on the data they collect from consumers; however not all consumers will appreciate such services. Prior research on online shopping suggests privacy concerns can stem from personalization and customization and can negatively impact consumers (Cai and Mardani 2023). Consumers may be wary of technology in brick-and-mortar stores because of hearing about data breaches by large retailers (e.g., Target, Home Depot; Inman and Nikolova 2017). Consistent with this, privacy concerns are a barrier to consumer acceptance of technology enabled personalization in retail stores (Riegger et al. 2021). Consumers react negatively to technologies they perceive as too invasive (White 2004). Technology that is perceived as invasive also reduces willingness to purchase from a retailer (Eastlick, Lotz, and Warrington 2006) and may even negatively impact the retailer's store image (Aloysius et al. 2018). Prior research acknowledges that retailers must balance consumer desire for personalization as well as desire for privacy (Martin and Palmatier 2020). We predict that while personalized atmospherics will positively impact consumers' shopping experiences, this will not be the case when consumers are concerned about privacy.

Privacy concerns would also likely impact the effects of interpersonal interactions on the pleasantness of the experience. While we predict that many consumers will respond positively to interpersonal interactions in stores of the future, Argo and Dahl (2020) suggest that not all consumers would respond positively to interpersonal interaction with employees. Shoppers often desire different levels of attention from employees; receiving the level of attention one desires positively impacts satisfaction (Alhouti et al. 2015). Receiving unwanted attention from an employee negatively impacts consumer responses (Esmark, Noble, and Breazele et al. 2018).

Consumers also respond negatively to unwanted interactions with other consumers. For instance, being touched on the back by a stranger leads a shopper to exit the store (Martin 2011; Martin and Murphy 2017). Drawing on these insights, we predict that interpersonal interactions will negatively impact the shopping experience when consumers are concerned about privacy.

Future research directions

The model we propose (see Fig. 1) is based on prior literature and marketplace examples. We predict that the three levers proposed will shape stores of the future and importantly, facilitate pleasurable shopping experiences that will motivate consumers to visit physical stores. Yet, the model awaits empirical testing. Prior research has identified positive effects of personalization on ad responses (Howard and Kerin 2004), sales (Nguyen, Emberger-Klein, and Menrad 2019), and responses to augmented reality applications (Smink et al. 2020). We believe that more personalized atmospherics will generally have a positive impact on consumers' shopping experiences. However, future research is needed to understand how personalized atmospherics influence behavioral outcomes. For instance, would consumers who are directed to a fitting room with a design that matches their prior shopping patterns or personality feel more comfortable trying on clothing and be more likely to purchase? If they buy clothing when they are comfortable would this same feeling persist when they wear the clothing to a location where they may not be able to control the ambience? Or would there be potential negative downstream effects of personalized atmospherics when consumers do not have control over the environment?

It would also be useful to examine whether there might be contexts in which consumers would like to remain anonymous and therefore personalization might not be beneficial. While a consumer might appreciate being recognized by name when entering some stores or purchasing some products there might be other times (e.g., when purchasing an embarrassing product or not looking their best) where consumers might

prefer to go unnoticed (Song, Huang, and Li 2017). Future research should examine the optimal levels of personalization and the consequences of too much personalization. In addition, it will be meaningful to investigate when and why these kinds of hyper-personalization are beneficial or counterproductive. It would also be interesting to examine whether giving consumers the opportunity to customize specific aspects of the environment might elicit gratitude among some consumers (e.g., those high in need for control).

The proposed model focuses on the main effects of each lever on the shopping experience as well as interaction effects between the levers and individual level factors. There could also be interactions between levers. For instance, personalizing or customizing some sensory elements may have more favorable effects on the shopping experience than personalizing or customizing others. Would listening to one's own music in a fitting room lead to a more favorable impact on the experience than varying the lighting within the room? Sensory elements might also impact the effects of interpersonal interactions on pleasurably of the experience. Would pleasant interpersonal interactions have a more favorable impact on the experience when the lighting is bright (vs. dim) or a specific ambient scent is present? Future research could examine these and other interactions.

Technology is now available to simulate haptic experiences. Recent work suggests that vicarious touch has similar beneficial effects as physical touch (Luangrath et al. 2022). Would virtually interacting with a product have the same positive effects on sales as physically interacting with a product (Peck and Childers 2006)? More broadly, as advances in technology make it possible to simulate other sensory experiences it will be important to understand the outcomes of these simulated experiences relative to actual experiences. Also, can these experiential differences vary depending on different sensory modalities (i.e., vision, olfaction, audition, haptics, gustation)? Since the level of technological development and implementation methods vary, these experiential differences can also be different depending on the modality. For example, in terms of gustatory sensations, would sampling with the help of technologies such as a lickable screen (which imitates food flavors) have the same effect on consumers' subsequent food choice as sampling actual food in stores? Similarly, can there be different effects of receiving a product sample from a robot versus human employee in a retail setting? At a broader level, retailers should examine the consequences of technology mediated sensory experiences compared to non-technology mediated experiences.

We are proposing that the increased focus on sensory elements in the retail environment will be well received by consumers. However, there could be contexts where consumers might perceive an environment enhanced by scent, music, or lighting as frivolous. The importance of atmospherics may depend on the type of company as well as the consumers' expectations (Bitner 1992). In stores that compete primarily on price (e.g., Dollar Tree, $5 below) or that have a charitable mission (e.g., Salvation Army) it is possible that consumers might interpret esthetic enhancements negatively as they do with donation solicitations (Townsend 2017). In the online domain, higher levels of engagement than expected increase positive emotions (Stsiampkouskaya et al. 2021), would higher levels of sensory engagement in a store have the same effect? Future research should investigate when enhancing sensory aspects of the retail environment is beneficial and when it is not.

Finally, we have discussed several examples of how technology can be used to facilitate pleasurable experiences. Yet, consumers are not uniformly receptive to technology. Future research should investigate consumers and technologies that might lead large segments of consumers to feel alienated.

Declaration of Competing Interest

None.

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